REMARKS

This Amendment is filed in response to the Office Action mailed on April 7, 2004. All objections and rejections are respectfully traversed.

Claims 2-4, and 6-29 are in the case.

Claims 1, 5, and 14 have been canceled without prejudice.

Claims 2, 6, 9, 10, and 12 have been amended to better claim the invention.

Claims 15-29 have been added to better claim the invention.

The Drawings have been amended to correct typing errors. No new matter has been entered, and the Drawings are believed to be in allowable condition.

At paragraph 1 of the Office Action, claims 1 and 6 were objected to for informalities. Claim 1 has been canceled, and claim 6 has been amended. Claim 6 is believed to be in allowable condition.

At paragraphs 2 and 3 of the Office Action, claims 1-5, 9, and 12-14 were rejected under 35 U.S.C. §102(e) and §103(a) as being unpatentable in view of Kicklighter, U.S. Patent No. 6,005,841, issued on December 21, 1999.

The present invention, as set forth in representative claim 12, comprises in part:

An intermediate network device for use in a computer network, the network device comprising:

...

an application loaded onto the first and second supervisor cards, the application configured to define and manipulate a plurality of state variables;

at least one line card defining a plurality of ports for forwarding messages across the computer network, the at least one line card in communicating relationship with the first and second supervisor cards and configured to receive and maintain port state information from the application; and

a high availability entity disposed on both the first and second supervisor cards, the high availability entities comprising:

an event mechanism for notifying a selected one of the first or second supervisor cards of changes to the application's state variables;

a database mechanism for storing the state variables at the first and second supervisor cards; and

a sequence mechanism for ensuring that the state variables stored at the first and second supervisor cards are consistent with the port state information maintained at the at least one line card, the sequence mechanism resetting the at least one line card in the event that the state variables and the port state information differ after a failure of one of the first or second supervisor cards.

Kicklighter discloses a redundancy arrangement for a telecommunications system that uses an active and a standby device in connection with a telecommunication switch. Communication is established between the active and standby devices to transfer configuration information and call processing information. While the active device is in service, the standby device receives all incoming data, but does not process it. When the state information held within the active device changes, the active updates the state information stored on the standby device, so that in the event of a failure of the active device, the standby device immediately takes over in the state equal to the last state of the active device.

Applicant respectfully urges that Kicklighter does not show Applicant's claimed novel *"sequence mechanism for ensuring that the state variables stored at the first and second supervisor cards are consistent with the port state information maintained at*

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the at least one line card, the sequence mechanism resetting the at least one line card in the event that the state variables and the port state information differ after a failure of one of the first or second supervisor cards."

Applicant's claimed invention is directed toward high availability architecture for network devices. Applicant provides for an active device and a standby device within the network device, with state information being transmitted from the active to the standby. Once the active device fails, the standby assumes control over the line cards of the network device. To assure that the standby device and line cards are in a consistent state, Applicant compares the state information stored in the standby device with that stored in the line card. If the states are different, Applicant resets the line card in order to properly align the two devices. Kicklighter does not address the difference in states between a supervisor card and a line card, but instead assumes that the standby device is in synchronization with the hardware of the telecommunications switch. This assumption completely missed the possibility that the two devices will be out of synchronization, the problem solved by the present invention.

Applicant respectfully urges that the Kicklighter patent is legally precluded from anticipating or rendering obvious the claimed invention under 35 U.S.C. §102 or §103 because of the absence from the Kicklighter patent of Applicant's *"sequence mechanism for ensuring that the state variables stored at the first and second supervisor cards are consistent with the port state information maintained at the at least one line card, the sequence mechanism resetting the at least one line card in the event that the state variables and the port state information differ after a failure of one of the first or second supervisor cards."*

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At paragraph 4 of the Office Action, claims 6-8 and 10-11 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 6 and 10 have been amended as such, and claims 6-8 and 10-11 are believed to be in allowable condition.
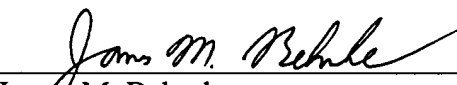
All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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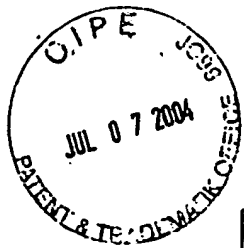
Annotated Sheet

FROM
FIG. 7A

┌───┐ ⌐722
│ LINE CARD(S) STORE SEQUENCE NUMBER RECEIVED IN SET COMMAND(S), IF │
│ ANY, FROM APPLICATION ON THE ACTIVE SUPERVISOR │
└───┘

┌───┐ ⌐724
│ APPLICATION NOTIFIES STANDBY SUPERVISOR OF ANY CHANGES TO THE │
│ APPLICATION'S SYNC RECORD(S) │
└───┘

┌───┐ ⌐726
│ STANDBY SUPERVISOR STORES ALL SYNC RECORDS RECEIVED ~~RECEIVED~~ │
│ FROM ACTIVE SUPERVISOR │
└───┘

┌───┐ ⌐728
│ UPON COMPLETING ITS PROCESSING OF THE EVENT INSTANCE, THE │
│ PRODUCING APPLICATION ISSUES AN eventComplete( ) SYSTEM CALL │
└───┘

┌───┐ ⌐730
│ EVENT MANAGER CLEARS THE PRODUCING APPLICATION FROM ITS PENDING │
│ EVENTS TABLE FOR THE EVENT INSTANCE │
└───┘

┌───┐ ⌐732
│ EVENT MANAGER NOTIFIES THE STANDBY SUPERVISOR THAT THE PRODUCING │
│ APPLICATION HAS COMPLETED ITS PROCESSING OF THE EVENT INSTANCE │
└───┘

┌───┐ ⌐734
│ STANDBY SUPERVIOSR CLEARS THE PRODUCING APPLICATION FROM ITS │
│ PENDING EVENTS TABLE FOR THE EVENT INSTANCE │
└───┘

┌───┐ ⌐736
│ UPON COMPLETING ITS PROCESSING OF THE EVENT INSTANCE, EACH │
│ LISTENING APPLICATION ISSUES AN eventComplete( ) SYSTEM CALL AND EVENT │
│ MANAGER CLEARS THE LISTENING APPLICATION FROM ITS EVENTS PENDING │
│ TABLE │
└───┘

┌───┐ ⌐738
│ EVENT MANAGER NOTIFIES THE STANDBY THAT LISTENING APPLICATION HAS │
│ COMPLETED ITS PROCESSING OF THE EVENT INSTANCE │
└───┘

TO FIG.
7C

FIG. 7B

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┌─────────────────────────────────────────────────────────────┐  ⌐1202
│   CRASH OR FAILURE AT THE ACTIVE SUPERVISOR IS DETECTED AT    │
│                   STANDBY SUPERVISOR(S)                       │
└─────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌─────────────────────────────────────────────────────────────┐  ⌐1204
│   STANDBY SUPERVISOR(S) ELECT ONE OF THEM TO BE THE NEWLY     │
│                     ACTIVE SUPERVISOR                         │
└─────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌─────────────────────────────────────────────────────────────┐  ⌐1206
│  HIGH AVAILABILITY MANAGER AT NEWLY ACTIVE SUPERVISOR NOTIFIES │
│         LINE CARDS OF THE CHANGE IN SUPERVISORS               │
└─────────────────────────────────────────────────────────────┘
                              │
                              ▼
┌─────────────────────────────────────────────────────────────┐  ⌐1208
│   NEWLY ACTIVE SUPERVISOR QUERIES LINE CARDS TO RETRIEVE      │
│              THEIR CURRENT SEQUENCE NUMBERS                   │
└─────────────────────────────────────────────────────────────┘
                              │
                              ▼
```

IS ANY RETRIEVED SEQUENCE NUMBER GREATER THAN THE SEQUENCE NUMBER AT THE NEWLY ACTIVE SUPERVISOR?   ⌐1210   —No—

Yes   ⌐1212

DIRECT EACH SUCH LINE CARD ~~CARD TO~~ TO RESET ITSELF   ⌐1214

ARE THERE ANY "OPEN" EVENTS?   ⌐1216   —No→

Yes

FOR EACH OPEN EVENT, IDENTIFY EVERY APPLICATION THAT HAD NOT YET COMPLETED THE EVENT AT THE TIME OF THE CRASH OR FAILURE AND, FOR EACH SUCH APPLICATION, RUN THE CORRESPONDING EVENT_RECOVERY_FUNC( )   ⌐1218

FIG. 12A